

Penta Helix Model for Sustainable Coastal Area Management in Bangka Islands

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ABSTRACT

Coastal environment degradation in Bangka Island was closely associated with irresponsible stakeholders to respond the issue. This study aimed to analyze the role of stakeholders using Penta Helix model with descriptive qualitative approaches. The results showed the mapping of stakeholders' role based on Penta Helix model. The actors consisting of government, private, mass media, academician, and NGO have an important role to enforce sustainable coastal management. The government has indicated an inconsistency behavior due to poor policy and private sectors do not obey toward preservation of coastal areas. This study suggested the government to review its policy recently published for sustainable coastal development and also to crack down violating business actors

Keywords: Penta helix model, sustainable coastal management, Bangka islands

1. INTRODUCTION

Indonesia is one of the biggest archipelago countries with over 99.093 km coastline [1]. There are abundant natural resources with a large area of coastal dominance. Bangka Belitung Island is one of the islands with a large potential marine resource. The geographical condition of Bangka Belitung Island shows that the sea area is four times wider than the land area, i.e. 65,301 km or 79 percent of the total Bangka islands. Besides the potential of fisheries, the Bangka islands also rich in tin mining of which tin also contributes greatly in the regional economic resources.

The abundant variety of potential natural resources in coastal areas has led to a large number of stakeholders whose interests in coastal areas management [2] [3]. Such large number of stakeholders involved in utilizing the coastal area has created conflict of interests which consequently causes loss or damage to the natural resources [4].

Environmental damage which occurs in the coastal areas of Bangka Belitung is massive and uncontrolled; unconventional tin mining activities both on land and in sea are just an instance. The high activity of tin mining proves that tin still becomes high value commodity [5]. These unconventional tin mining activities are mostly carried out on land, upstream of rivers, and even on the coast of the ocean not far from the offshore [6].

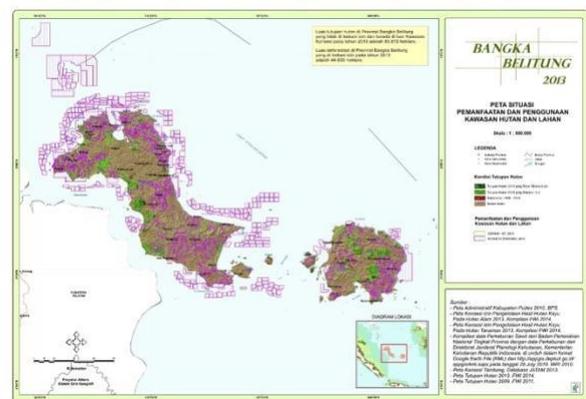


Figure 1. Situation Map on the Utilization and Use of Forest Area and Land (Forestrywatchindonesia, 2013)

This situation map describing the utilization and the use of forest and land in which the use of land illustrated by purple squares in the Bangka Belitung islands is dominated by mining concession activities and the rest in green is designated for timber permit management. The area of forest cover in Bangka Belitung province which was not encumbered with permits and was located in the concession area in 2013 was 83.872 hectares and there was a deforestation area in Bangka Belitung province that was subject to permits in 2013 which covered 44,636Ha. Since the enactment of Law Number 23 Year 2014, the provincial government imposes restrictions on regional

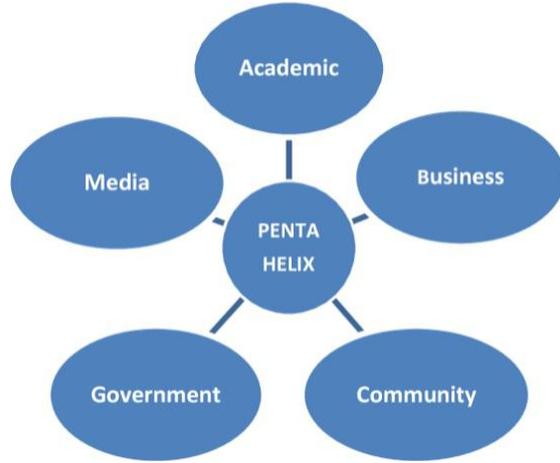
governments for coastal areas management which causes overlapping in handling and management. Moreover, this caused the biggest effect on coastal areas management by regional governments such as law enforcement in their region. Illegal mining has been increasing every year, according to WALHI in Tribunnews [7], there are many critical area covering 810,059 hectares or 79.91 percent of the whole Bangka islands, and 243,193 hectares or 23.9 percent of the whole Belitung islands. On the other hand, the Central Government of Indonesia through the Ministry of Energy and Mineral Resources also maintains a Mining Business License (IUP- local abbreviated term for Izin Usaha Pertambangan [Mining Business License]) for tin mining even though the area is situated in the Coastal and Small Islands Zoning Plan (local abbreviated term: RZWP3K).

The case in Bangka Belitung implied that the condition of the coast is threatened by increasingly widespread illegal mining activities in the coastal waters. The core of the problems is ineffective management of coastal areas in the planning and implementation of coastal areas and so far it seems to be sectoral and disaggregated. Therefore, the problem of multi sectoral governance issues ought to be analyzed by multi-actor involvement by using the Penta Helix Model.

2. LITERATURE REVIEW

2.1 Collaboration on Penta Helix

Collaborative governance, based on Emerson and Nabatchi (2012) [7], is defined as collaboration process constituting a dynamic element of interaction consisting of: first, principle attachment, i.e. the process of several things such as face-to-face dialogue, or through technological connection which form the unification of common principles in an achievement; second, mutual motivation, i.e. the uniformity of commitment in a process such as feeling of having interests and caring for the group and seeing the collaboration process as a process of legitimacy; and third, the capacity to take a role together which requires planning and the necessary resources to support the actions such as facilities, leadership, and study of related literature. Meanwhile, according to Ansell and Gash (2008) [8], collaborative governance has four main variables consisting of initial conditions, institutional design, leadership, and collaborative processes. Most of the collaborative leadership emerges from business and public groups to overcome regulatory uncertainties. This is the result of a cultural mindset rather than legalistic approach in doing business practices [9]. Brink [10] stated in his study that collaborative governance is used to create a concept occurring during adaptation interactions and how collective thinking can be channeled to be applied to organizational or group participation.



Pentahelix Scheme

2.2 Penta Helix Based Sustainable Coastal Areas Management

Coastal areas development in practical sustainable perspective may refer to a combination of the principles of sustainable development in an area. Serageldin (1993) [11] argued that sustainable development has three main pillars/dimensions: economic, ecological and social pillars. Economic pillar emphasizes on earning income based on efficient use of resources. Ecological approach emphasizes the importance of protecting biodiversity which will contribute to the balance of the world's ecosystems. Meanwhile, social approach emphasizes on maintaining the stability of socio-cultural system including handling conflicts both among generations and within one generation.

Serageldin also explained that the sustainability of economic aspects include economic growth, capital maintenance and efficient use of resources and capital. Ecological sustainability includes ecosystem integrity, carrying capacity, and protection for species diversity and natural resources. Meanwhile, the social aspect of sustainability covers the existence of justice (equity), empowerment, participation and institutional aspects.

Penta helix becomes a required significant aspect to support sustainable development where this concept initially evolved from the triple helix and quadruple helix. This theory is a refinement of many previous ones. Stakeholders in coastal areas management in Bangka have collaboration as a joint-working action. This fits the theory of John-Wanna (2008) [12] stating that the collaboration process involves various actors, individuals, and stakeholders who work together to achieve their goals. Penta helix concept involves a new actor, i.e. mass media. Thus, these actors include the government, the business world, academicians, non-governmental organizations, and mass media.

To answer the challenges of multi-stakeholder needs, according to I. Calzada [13], it is necessary to focus on the fulfillment of complex inter-stakeholder problems through experimental research, and alternative policies in cities or regions. The Penta helix model is very suitable for

answering multi-actor problems where stakeholders represent multiple interests at one location [14].

There are five elements of stakeholders involved: the Government, Private, Academics (Academicians), Non-Governmental Organizations (NGOs), and Mass Media, which can directly influence policy planning thus they could interact with one another. Sustainable coastal area management in the perspective of multi-stakeholder collaboration is indicated by implementing an integrated coastal area management policy supporting three dimensions of sustainability, i.e. economic, social, and ecological dimensions [3]

Table 1. Dimension and Factors Affecting Sustainable Coastal Areas Management

Dimension	Factors
Economy	<ul style="list-style-type: none"> - Increasing public's income - Employment opportunities - Contribution to PAD (Local [Regional/Provincial] Own Source Revenue - Infrastructure Improvement - Stability on Productivity
Social	<ul style="list-style-type: none"> - Social Justice - Community Empowerment - Institutional Empowerment - Community Involvement - Concern to local culture
Ecology	<ul style="list-style-type: none"> - Conservation Efforts - Concern to carrying capacity of the environment
	<ul style="list-style-type: none"> - Biodiversity protection

3. METHODS

This study used a descriptive qualitative approach to explain the responses of stakeholders to the policies of coastal areas management in the Bangka Belitung Islands through a collaborative governance approach in order to create a sustainable coastal area. The informants in this study were from the provincial government, regency governments, mining business actors, the community and the academic elements.

4. RESULTS AND DISCUSSIONS

It has been previously stated that the problems on integrated environmental management in Bangka Island is a complex problem requiring the involvement of multi stakeholders to handle it. With the enactment of Law No. 23/2014, the provincial government has imposed restrictions on local (regency) governments on coastal areas management which caused overlapping in the handling and management. This has an eventually direct effect on the governance of coastal areas by local (regency) governments such as law enforcement in its region. This actually reflected the sectoral egos of each stakeholder in handling any decision and commitment for developing sustainable environmental governance. By using Penta helix model, the researcher would analyze various interests involving five elements of stakeholders: government, private sectors, non-governmental organizations, academicians, and mass media.

4.1 Collaborative Governance to Create Sustainable Coastal Areas

Sustainable coastal area management in the perspective of multi-stakeholders collaboration is characterized by implementing integrated coastal area management policies which support three dimensions of sustainability: economic, social and ecological dimensions.

4.1.1 Government

The stakeholders involved were the governments, i.e. the Governor of Bangka Belitung Province, the Office of Industry and Trade of Bangka Belitung, Planning and Development Agency of Bangka Belitung, Central Bureau of Statistics (BPS) of Bangka Belitung Province, Health Office, Social and Manpower Office, Public Works Office. The government in 2018 has mining permits covering an area of 62,068 hectares and an area of 21,845 hectares in Belitung Island. The yield from the tin mining reached 20 to 25 percent of the total Local Own-Source Revenue (PAD) [15].

This high tin production has affected the economic activity in Bangka Belitung Islands Province. Furthermore, this was reflected in the Gross Regional Product (GRDP) recorded in the five year period (2011-2016) contributing around 12 percent. This result exceeded the national average with only 7 percent per year (BPS, 2016, Percentage contribution of mining and quarrying industry total GDRP). In the three-year period, 2015-2017, it recorded the profit sharing funds from Mineral and Coal Mining for Bangka Belitung Province reaching IDR 383,87 billion with an annual average calculation of IDR 39,23 billion.

Such sweet contribution of tin to the government was inseparable from the bitterness of the problems of illegal mining which have not yet been resolved. This was evidenced by the difference in the data recorded in BPS and in the Ministry of Trade in 2004-2013. There was a sales

difference amounted 301,800 tons of exported tin which was worth selling for US\$ 231,9 million. This indicated that law enforcement on Unconventional Mining (local term: Tambang Inkonvensional/TI) activities was very unclear. Poor control from the government has caused the loss of potential state revenue generated from tin mining. Over the span of 10 years since 2004, Indonesia Corruption Watch (ICW) revealed that there was a loss of 68 trillion rupiah from taxes, reclamation costs, royalties, and non-tax revenues [16] (kupasonline). Moreover, this was due to downstream law enforcement without looking at the main actors in unconventional mining activities which eventually worsen the existing environmental damage.

4.1.2 Private Sector

PT Timah Tbk is the largest tin operator and is owned by the Government under BUMN (State Owned Enterprises) operating in Bangka. There are two types of tin mining, i.e. by digging the ground and vacuuming it with a streamed spray pump, and marine mining which is done by suctioning tin ore from the seabed by using a ship. In the post-land mining process, there is usually an area under the soil as a result of the excavation. As a form of PT Timah's responsibility, it was stated in the 2015-2019 reclamation planning document mentioning a reclamation program of 400 hectares has been launched with a total budget of IDR 60 billion [17] Babelreview (Siahaan, 2019) as a form of empowerment for the affected communities. Thus, PT Timah and the government collaborated to accelerate reclamation by planting a variety of horticultural/fruit crops targeted to be completed in 2020 [18]. The total area of land which has been reclaimed from 1992 to 2018 is 14.593 hectares spreading across Bangka and Belitung areas. In details, it covered 4.671 hectares in Kabupaten Bangka (Bangka Regency), 2.295 hectares in Bangka Barat (West Bangka), 1.412 hectares in Bangka Tengah (Central Bangka), 489 hectares in Bangka Selatan (South Bangka), 749 hectares in Belitung, 2.139 in Belitung Timur (East Belitung) and the other 2.840 hectares in across regencies [26]. PT Timah also did some innovations in the use of marine mining with borehole mining method technology, which is environmental friendly and minimizes the impact of the damage it may cause [19].

4.1.3 Civil Society

The government of Pangkalpinang City in accelerating poverty alleviation has implemented Kotaku program by involving various stakeholders. This program is an extension of the PNPM Mandiri program which has been a part of the central government's efforts to reduce poverty since 2007 [20].

On the other hand, for community empowerment and to support the government in poverty alleviation, PT Timah has a master plan on community empowerment and development (RIPPM) for the period of 2019-2029,

consisting of four superior programs: improving the quality of education in the form of vocational school program facilities with specific specialties, improving households' health which focus on providing sanitation for the community's houses, increasing community income in the form of assistance for fishing boats with 1-5 GT capacity, and improving some supporting infrastructures such as realizing biogas energy, fishing docks, and building healthy houses [17].

4.1.4 NGO

Non-governmental organizations involved in sustainable coastal management included fishermen communities, coastal pond farmers, and tin mining communities. For example, people from communities who were members of marine tin mining rejection alliance in Matras, Sungailiat as a form of maintaining the sustainability of the marine ecosystem rejected the tin mining operation [21] (Putra, 2019) This also happened in Toboali, South Bangka, the community from Perhimpunan Batu Perahu (Batu Perahu Association), South Bangka, was again threatened as their territory was used as tin mining concession due to the validation of RZWP3K (Zoning Design for Coastal Areas and Small Islands) stating that the sea waters around Toboali are included into three management zones: tourism, mining and fisheries zones. The existence of mining is very clearly threatening the sustainability of marine and coastal ecology and is not in accordance with the principle of the dimensions of environmental management sustainability [22]. On the other hand, viewed from economic point of view, the prevalence of mining without permits from the community was caused by welfare and economic factors. This is inseparable from the policies of decentralization and regional autonomy providing opportunities for the provincial and regency regions to manage their own territories with the approval of the governor. However, in general, unconventional mining activities do not have permits from local governments, and there is only minimal supervision from the local governments [23]

4.1.5 Academicians

The University of Bangka Belitung is one of the largest universities in Bangka Belitung Province. The objectives of this university are in line with sustainable development, one of which is to focus on natural improvement and sustainable environmental management. It is in accordance with the collaboration among the entities at the Rio +20 Conference whose achievement of galvanizing commitments from higher education institutions to teach and encourage research on sustainable development, greening campuses and support local efforts [24].

Even though the mining economy era is still ongoing, academicians at the University of Bangka Belitung have successfully made a collaboration with the community to explore the tourism sector in Bangka Belitung, one of which

is in Pasirputih region, as well as to encourage the community to participate in One Village One Product (OVOP) program in Kabupaten Bangka Tengah (Bangka Tengah Regency) and later to be developed as areas of edutourism [13] [25]. This activity was in line with the Regional Long-Term Development Plan (local abbreviated term: RPJMN) for 2005-2025. One of its goals is to focus on developing economic potential which is owned apart from mining. In addition, to campaign for sustainable environmental management this educational institution also encouraged academicians to be actively involved in expressing their thoughts in conferences, journal writing, or community empowerment activities to support community welfare programs initiated by the Government [26]. Furthermore, UGM academicians' community in collaboration with the Government of Bangka Belitung Province held such activities as Thematic KKN (KKN is local term for community service program, one of high education programs for university students) consisting of students conducting community service and having a mission to focus on certain areas in problem solving. This activity was held every year. In 2019 it was held in Kecamatan Sungailiat (Sungailiat SubDistrict) and Kecamatan Merawang (Merawang SubDistrict). This activity was initiated to help the community explore the existing potential to be developed, such as encouraging people to form tourism-conscious community groups, making alternative animal feeds, and raising awareness for a healthy lifestyle [27].

4.1.6 Mass Media

Basically, the breath of journalism in mass media is their role of social control as the function of mass media based on Law Number 40 Year 1999. The function of this social control is the real implementation and the meaning of supporting democratic process containing such elements as social participation, social responsibility, social support, and social control. There are various large local mass media operating in Bangka Belitung, for instances, BabelPos Daily, Radar Bangka Daily, WowBabel.com, Sonora Radio, Eljohn Radio, etc.

The involvement of mass media in collaborative governance based on Penta Helix is very significant to provide supervision and to carry out control functions over various policy implementations carried out by the government or activities carried out by the community. In this perspective, journalism is required to provide accurate and accountable information.

5. CONCLUSION

Based on the results in this study, it can be concluded that all elements in Penta Helix play a very decisive role in sustainable coastal management in Bangka Belitung province. The contribution of the role of each element can be

a strengthening aspect for the sustainability of coastal areas; however, it can also weaken the sustainability of coastal areas. Therefore, it is necessary to have better collaboration among all elements by establishing more intense cooperation and communication.

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